In The Claims:

Claims 1-11 (canceled).

Claims 12-35 and 44-69 (withdrawn).

Claims 36-43 and 70-77 (canceled).

78. (currently amended) A cylindrical bonding structure on a silicon chip such that the structure may flip over and connect with a substrate, wherein the chip has at least one bonding pad and the substrate has a substrate surface having a patterned solder mask and at least one junction pad thereon, and the patterned solder mask layer has at least an opening that exposes the junction pad, the cylindrical bonding structure comprising:

a conductive cylinder on the bonding pad of the chip;

a transition layer on the conductive cylinder; and

a cylindrical solder cap on the transition layer, ~~wherein the transitional layer comprises an anticorrosive material and~~ wherein the cylindrical solder cap has an outer diameter smaller than the diameter of the conductive cylinder and the diameter of the opening in the patterned solder mask, and a length greater than the depth of the opening, and the solder material has a melting point lower than the conductive cylinder material.

79. (new) The structure of claim 78, wherein the bonding pad is the original bonding pad on the chip.

80. (new) The structure of claim 78, wherein the chip further includes a redistribution circuit layer and the bonding pad is a pad on the redistribution circuit layer.

81. (new) The structure of claim 78, wherein material forming the conductive cylinder is selected from a group consisting of tin, lead, copper, gold, silver, zinc, bismuth, magnesium, antimony, indium and an alloy of the aforementioned metals.

82. (new) The structure of claim 78, wherein material forming the cylindrical solder cap is selected from a group consisting of tin, lead, copper, gold, silver, zinc, bismuth, magnesium, antimony, indium and an alloy of the aforementioned metals.

83. (new) The structure of claim 78, wherein the structure further includes a ball contact metallic layer between the conductive cylinder and the bonding pad.

84. (new) The structure of claim 78, wherein the transition layer has at least one conductive layer.

85. (new) A cylindrical bonding structure on a chip such that the structure may flip over and connect with a substrate, wherein the chip has at least one bonding pad and the substrate has a substrate surface having a patterned solder mask and at least one junction pad thereon, and the

patterned solder mask layer has at least an opening that exposes the junction pad, the cylindrical bonding structure comprising:

a conductive cylinder on the bonding pad of the chip;

a transition layer on the conductive cylinder; and

a cylindrical solder cap on the transition layer, wherein the cylindrical solder cap has an outer diameter smaller than the diameter of the conductive cylinder and the diameter of the opening in the patterned solder mask, and the solder material has a melting point lower than the conductive cylinder material.

86. (new) The structure of claim 85, wherein the bonding pad is the original bonding pad on the chip.

87. (new) The structure of claim 85, wherein the chip further includes a redistribution circuit layer and the bonding pad is a pad on the redistribution circuit layer.

88. (new) The structure of claim 85, wherein material forming the conductive cylinder is selected from a group consisting of tin, lead, copper, gold, silver, zinc, bismuth, magnesium, antimony, indium and an alloy of the aforementioned metals.

89. (new) The structure of claim 85, wherein material forming the cylindrical solder cap is selected from a group consisting of tin, lead, copper, gold, silver, zinc, bismuth, magnesium, antimony, indium and an alloy of the aforementioned metals.

90. (new) The structure of claim 85, wherein the structure further includes a ball contact metallic layer between the conductive cylinder and the bonding pad.

91. (new) The structure of claim 85, wherein the transition layer has at least one conductive layer.